

I Claim:

1.

A sealed electrical fitting for an automotive fuel tank comprising:

a wall of the fuel tank, the wall having an opening defined by an edge;

a flange portion having a peripheral edge and a hole defined by an inner edge, the outer peripheral edge engaged to the circumferential edge of the wall;

a glass seal disposed radially inward of the inner circumferential edge; and

a plurality of pins penetrating the glass seal.

2.

The sealed electrical fitting as set forth in claim 1 further comprising a tubular housing transversely extending through the flange portion, the tubular housing having an outer surface and an inner surface, the outer surface engaged to the inner edge of the flange, the inner surface engaged to the glass seal.

3.

The sealed electrical fitting as set forth in claim 2 wherein the thermal expansion rate of the flange portion and the tubular housing is greater than the thermal expansion rate of the plurality of glass seals.

4.

The electrical fitting as set forth in claim 3 wherein the glass seal is barium alkali glass having electrical insulating properties, the plurality of pins are nickel iron, and the flange portion and tubular housing are steel.

5.

The electrical fitting as set forth in claim 4 wherein the outer surface of the tubular housing and the inner circumferential edge of the flange form a seam, the seam selected from a group consisting of a brazed joint, a soldered joint, and a welded joint.

6.

The electrical fitting as set forth in claim 5 wherein the plurality of pins each have a diameter length, and the glass seal has a distance between pin length which is equal to or greater than the diameter length.

7.

A glass-sealed electrical fitting for an automotive fuel tank comprising:

- the fuel tank having a wall;
- a plurality of pins penetrating the wall; and
- at least one glass seal disposed hermetically between the wall and the plurality of pins.

8.

The electrical fitting as set forth in claim 7 wherein the wall has an opening, a circumferential edge, and a flange portion, the opening defined by the circumferential edge, the flange portion having an outer peripheral edge engaged to the circumferential edge of the wall, the flange portion penetrated by the plurality of pins, the at least one glass seal disposed sealingly between the flange portion and the plurality of pins.

9.

The electrical fitting as set forth in claim 8 wherein the flange portion has a plurality of collars defining a plurality of apertures, each one of the plurality of pins extending through a respective one of the plurality of apertures, the at least one glass seal being a plurality of glass seals, each one of the plurality of glass seals disposed hermetically between each one of the respective plurality of collars and each one of the respective plurality of pins.

10.

The sealed electrical fitting as set forth in claim 9 wherein the thermal expansion rate of the aperture plate is greater than the thermal expansion rate of the plurality of glass seals.

11.

The electrical fitting as set forth in claim 10 wherein the plurality of glass seals are barium alkali glass, the plurality of pins are nickel iron, and the flange portion is steel.

12.

The electrical fitting as set forth in claim 11 wherein the plurality of glass seals are annular.

13.

The electrical fitting as set forth in claim 12 wherein the plurality of pins each have a diameter length and the seal has an outer diameter length which is two and one half times that of the diameter length.

14.

The electrical fitting as set forth in claim 13 wherein the plurality of glass seals each have an axial length equal to the outer diameter length of the glass seal.

15.

The electrical fitting as set forth in claim 14 wherein the flange portion has a collar separation length equal to or greater than the outer diameter length of the glass seal.

16.

The electrical fitting as set forth in claim 15 wherein the flange portion has a peripheral edge to collar length which is equal to or greater than the outer diameter length of the glass seal.

17.

A sealed electrical fitting for an automotive fuel tank comprising:

a wall of the fuel tank, the wall having an opening defined by a circumferential edge;

a flange portion having a peripheral edge and a hole defined by an inner edge, the peripheral edge engaged to the circumferential edge of the wall;

an aperture tray having a peripheral edge, a plurality of collars, and a plurality of apertures, the peripheral edge of the aperture engaged to the inner edge of the flange portion, the plurality of collars defining the plurality of apertures;

a plurality of pins, each pin extending through a respective one of the plurality of apertures; and

a plurality of glass seals engaged hermetically between the corresponding plurality of pins and the plurality of collars.

18.

The electrical fitting as set forth in claim 17 wherein the glass seal material is selected from the group consisting of barium alkali, borosilicate, and soda lime, the glass seal having electrical insulating properties, the plurality of pins are nickel iron, and the aperture plate material is selected from the group consisting of stainless steel and steel.

19.

The electrical fitting as set forth in claim 18 wherein the inner edge of the flange portion and the peripheral edge of the aperture tray form a seam, the seam selected from a group consisting of a brazed joint, a soldered joint, and a welded joint.

20.

The electrical fitting as set forth in claim 19 further comprising:

the plurality of pins each have a pin diameter length;

the plurality of glass seals each having a seal diameter length equal to a seal thickness length, the seal diameter length equal to or greater than two and one half times the pin diameter length; and

the aperture plate having a distance between adjacent apertures length and a distance between peripheral edge and aperture length, the distance between apertures length is equal to or greater than the seal diameter length, the distance between peripheral edge and aperture length is equal to or greater than the seal diameter length.